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The management of children with symptomatic, uncomplicated renal cysts: Case study

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ABSTRACT

A simple kidney cyst is rarely seen in pediatrics; most are benign but can cause a variety of symptoms. They are typically discovered incidentally during radiological investigations. A wide range of management options for symptomatic cysts depends on the presentation. We present here a case of a large renal cyst in a child, which was symptomatic and managed surgically in Armed Forces Hospital Wadi Aldawasir, KSA, with a good outcome.

Keywords: Huge renal cyst, simple cyst sonography

1. INTRODUCTION

The most prevalent type of cystic lesions in humans are simple kidney cysts. They are usually oval to spherical, single, or multiple, one-sided or bilateral, and filled with fluid either clear, plasma-like, or straw-colored (Nahm and Ritz, 2000; Terada et al., 2002). Simple renal cysts are not connected to any part of the nephron; although they may originate initially from a portion of the nephron Blazer et al., (1999), they may manifest at any time in utero and be diagnosed as early as 14 weeks of gestation (McHugh et al., 1991). Between birth and 18 years of age, the incidence of simple renal cysts is stable, having an average incidence of 0.22% and a range of 0.1% to 0.45% (Blazer et al., 1999; McHugh et al., 1991). The most common symptoms are flank pain, hematuria, palpable mass, and urinary tract infections (Lüscher et al., 1986; Papanicolaou et al., 1986).

Most patients' cysts are typically discovered incidentally on ultrasonography or computed tomography (Gimpel et al., 2019). Simple cysts vary considerably in size, ranging from less than 1 cm to greater than 10–15 cm (Tada et al., 1983). The increased use of ultrasound scans has led to the diagnosis of simple kidney cysts, and there has been an increase in cases in children (Koutlidis et al., 2015). The CT criteria for a simple cyst are like those used in ultrasonography: 1. a

sharp, thin, distinct, smooth wall and margin; 2. a spheric or oval shape; and 3. homogeneous content. When these criteria are respected, the accuracy of the diagnosis of a simple cyst by CT approaches 100% (McClellan et al., 1979). Surgical intervention for an asymptomatic simple cyst is not indicated (Bayram et al., 2014; O'Kelly et al., 2019; Rediger et al., 2019). Laparoscopic or open unroofing with marsupialization has become the first line of treatment (Holl et al., 1976; Okeke et al., 2003; Wakefield and Gordon, 1989).

2. DESCRIPTION OF THE CASE REPORT

A 6-year-old girl presented with abdominal distention and abdominal pain for one year. The patient was admitted to pediatric surgery and urology units. The examination revealed stable vital signs, the abdomen was mildly distended predominantly on the right-side, palpable mass occupying the right hypochondrium and lumbar regions, by manually palpable. Laboratory investigations were normal, and an abdominal ultrasound showed a right renal large simple cyst. CTU with IV and oral contrast showed a right-sided retroperitoneal cyst measuring about 16.7 x 13.5 x 12.9 cm, splaying the right renal tissue and pelvicalyceal system (Figure 1, 2 and 3).

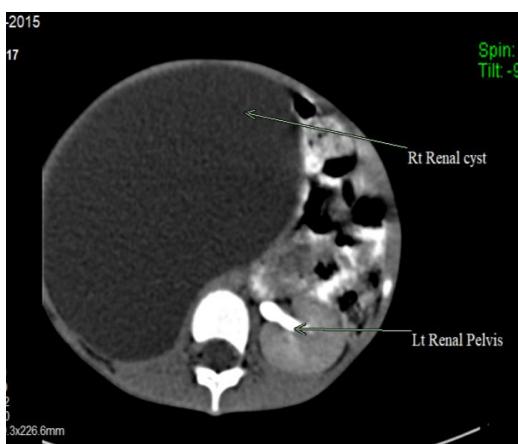


Figure 1 Axial view (A) CT scan urinary tract before surgery

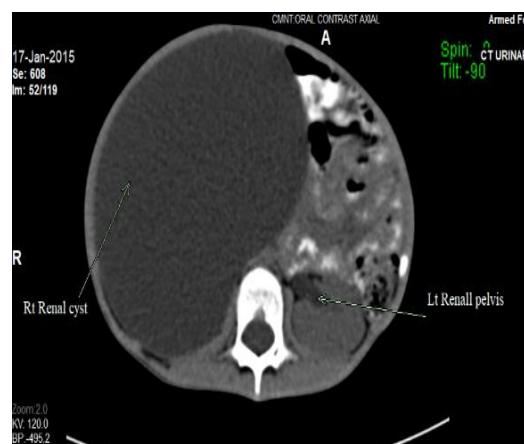


Figure 2 Axial view (B) CT scan urinary tract before surgery

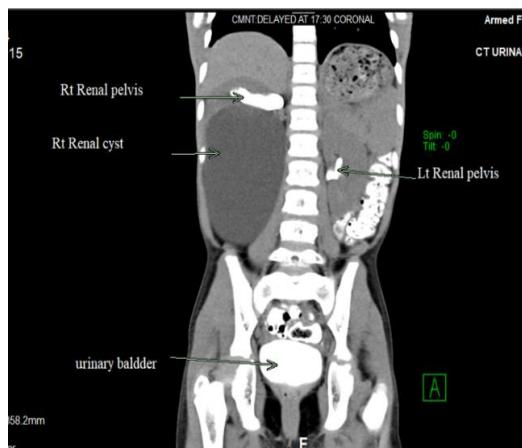


Figure 3 Coronal view CT scan urinary Tract before surgery

To remove the cyst, surgical resection and marsupialization were performed. A total of 1500 ml of clear fluid was drained (Figure 4 & 5). Cytology of the cystic fluid revealed no malignant cells, and the histopathology confirmed that it was a benign simple renal cortical cyst, moderately congested with no evidence of malignancy. Following surgery, the patient had a standard course of care, was

discharged home on the third postoperative day, and underwent follow-up care for six months to two years without experiencing any recurrence.

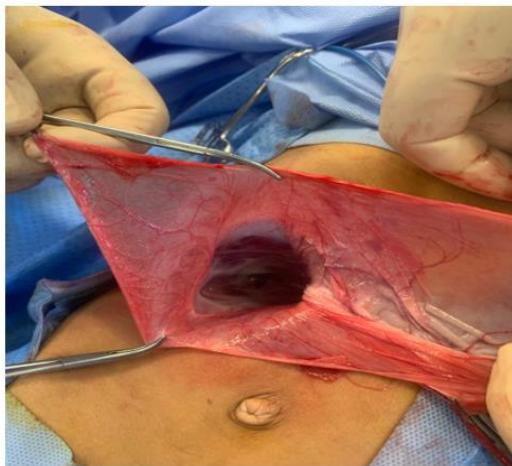


Figure 4 Intraoperative exploration of cyst (A)



Figure 5 Intraoperative exploration of cyst (B)

3. DISCUSSION

Our case presented with abdominal pain and distension, unlike most of the published papers, which reported that a simple renal cyst was often asymptomatic (Bisceglia et al., 2006; Boybeyi et al., 2008). These symptoms confirmed by a radiological diagnosis, which led us to choose the surgical intervention. Generally, there are no guidelines or consensus for treating simple renal cysts (Deweerd and Simon, 1956). One of the significant factors that considered is how big the cyst is. The more likely it excreted one, the greater the likelihood that surgery will be performed (Okeke et al., 2003). This study supported our choice of surgical intervention because it was a giant renal cyst compared with internationally reported cyst sizes.

In our experience, we did open intraperitoneal cyst unroofing with marsupialization. The literature stated that laparoscopic marsupialization proved to cause less additional morbidity and mortality, especially when retroperitoneal access is used Teichman and Hulbert, (1995), compared with our case, the open intraperitoneal technique showed a good outcome. One study reported that there are recurrences after marsupialization among cysts treated surgically (Holl et al., 1976). In our case with two years of clinical and radiological follow-up, there was no recurrence.

4. CONCLUSION

It will help if you suspect simple renal cysts in pediatric patients presenting with abdominal pain, distension, and lower urinary tract symptoms. Surgical management such as open surgery and marsupialization of the cyst can give a good outcome in huge simple renal cysts in pediatric patients, the same as the outcome after laparoscopic surgery. The excellent outcome of open surgical resection was reflected in symptomatic relief and negative radiologic findings.

Author's Contributions

1,2 developed the theory, drafted the manuscript, and performed the literature review, performed the computations, and verified the analytical methods. 3, 4 conceived of the presented idea and supervised findings of this work, shared in setting study concept, results display, manuscript preparation, publication logistics, final manuscript editing. All authors discussed the results and contributed to the final manuscript. All authors have no competing interests.

Informed Consent

Written and oral informed consent was obtained from patient garden before the surgery. Additional informed consent was obtained for information included in this manuscript.

Ethical approval

This study was approved by the Research Ethics Committee of Armed Forces Hospital Wadi Aldawasir (Ethical approval #: 0035-30/05/2024).

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

REFERENCES

1. Bayram MT, Alaygut D, Soylu A, Serdaroglu E, Çakmakçı H, Kavukçu S. Clinical and radiological course of simple renal cysts in children. *Urol* 2014; 83(2):433-7. doi: 10.1016/j.urology.2013.08.055
2. Bisceglia M, Galliani CA, Senger C, Stallone C, Sessa A. Renal cystic diseases: a review. *Adv Anat Pathol* 2006; 13(1):26-56. doi: 10.1097/01.pap.0000201831.77472.d3
3. Blazer S, Zimmer EZ, Blumenfeld Z, Zelikovic I, Bronshtein M. Natural history of fetal simple renal cysts detected in early pregnancy. *J Urol* 1999; 162(3 Pt 1):812-4. doi: 10.1097/00005392-199909010-00066
4. Boybeyi Ö, Karnak İ, Orhan D, Ciftci AO, Tanyel FC, Kale G, Senocak ME. Cystic nephroma and localized renal cystic disease in children: diagnostic clues and management. *J Pediatr Surg* 2008; 43(11):1985-9. doi: 10.1016/j.jpedsurg.2008.04.006
5. Deweerd JH, Simon HB. Simple renal cysts in children: review of the literature and report of five cases. *J Urol* 1956; 75(6):912-21.
6. Gimpel C, Avni EF, Breysem L, Burgmaier K, Caroli A, Cetiner M, Haffner D, Hartung EA, Franke D, König J, Liebau MC, Mekahli D, Ong ACM, Pape L, Titieni A, Torra R, Winyard PJD, Schaefer F. Imaging of kidney cysts and cystic kidney diseases in children: an international working group consensus statement. *Radiology* 2019; 290(3):769-82. doi: 10.1148/radiol.2018181243
7. Holl WH 3rd, Delporto GB, Keegan GT, Turner WR Jr. Case report: simple renal cyst in child. *J Urol* 1976; 115(4):465-6. doi: 10.1016/s0022-5347(17)59244-7
8. Koutlidis N, Joyeux L, Méjean N, Sapin E. Management of simple renal cyst in children: French multicenter experience of 36 cases and review of the literature. *J Pediatr Urol* 2015; 11(3):113-7. doi: 10.1016/j.jpurol.2015.03.003
9. Lüscher T, Wanner C, Siegenthaler W, Vetter W. Simple renal cyst and hypertension: cause or coincidence? *Clin Nephrol* 1986; 26(2):91-5.
10. McClellan BL, Stanley RJ, Melson GL, Levitt RG, Sagel SS. CT of the renal cyst: is cyst aspiration necessary? *AJR Am J Roentgenol* 1979; 133(4):671-5. doi: 10.2214/ajr.133.4.671
11. McHugh K, Stringer DA, Hebert D, Babiak CA. Simple renal cysts in children: diagnosis and follow-up with US. *Radiology* 1991; 178(2):383-5. doi: 10.1148/radiology.178.2.1987597
12. Nahm AM, Ritz E. The simple renal cyst. *Nephrol Dial Transplant* 2000; 15(10):1702-4. doi: 10.1093/ndt/15.10.1702
13. Okeke AA, Mitchelmore AE, Keeley FX, Timoney AG. A comparison of aspiration and sclerotherapy with laparoscopic de-roofing in the management of symptomatic simple renal cysts. *BJU Int* 2003; 92(6):610-3. doi: 10.1046/j.1464-410x.2003.04417.x
14. O'Kelly F, McAlpine K, Abdeen N, Keays MA, Leonard MP, Guerra LA. The Prevalence, Clinicodemographics, and Outcomes of Incidental and Symptomatic Renal Cysts in a Pediatric Cohort Undergoing Ultrasonography. *J Urol* 2019; 202(2):394-399. doi: 10.1097/JU.0000000000000264
15. Papanicolaou N, Pfister RC, Yoder IC. Spontaneous and traumatic rupture of renal cysts: diagnosis and outcome. *Radiology* 1986; 160(1):99-103. doi: 10.1148/radiology.160.1.3715054
16. Rediger C, Guerra LA, Keays MA, Wayne C, Reddy D, Ksara S, Leonard MP. Renal cyst evolution in childhood: a contemporary observational study. *J Pediatr Urol* 2019; 15(2):188.e1-188.e6. doi: 10.1016/j.jpurol.2019.01.006

17. Tada S, Yamagishi J, Kobayashi H, Hata Y, Kobari T. The incidence of simple renal cyst by computed tomography. *Clin Radiol* 1983; 34(4):437-9. doi: 10.1016/s0009-9260(83)80238-4
18. Teichman JM, Hulbert JC. Laparoscopic marsupialization of the painful polycystic kidney. *J Urol* 1995; 153(4):1105-7.
19. Terada N, Ichioka K, Matsuta Y, Okubo K, Yoshimura K, Arai Y. The natural history of simple renal cysts. *J Urol* 2002; 167 (1):21-3.
20. Wakefield AJ, Gordon EM. A huge renal cyst presenting in childhood. A case report and review of the literature. *J R Soc Med* 1989; 82(7):443-5. doi: 10.1177/014107688908200729